

CLAIMS

What is claimed is:

1. A method of blurring a digital video image having a plurality of pixels, each having a value specifying color data, said method comprising:
Identifying a particular pixel of the plurality of pixels;
Selecting P pixels from the plurality of pixels;
Determining a blurred value as a function of the values of the selected pixels; and
Replacing the value of the particular pixel with the blurred value.
2. The method of claim 1 wherein $P=2^N$, $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel.
3. The method of claim 1 wherein $P=2^N$ and further comprising identifying another pixel of the plurality of pixels other than the particular pixel as an additional particular pixel, and for said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.
4. The method of claim 3 wherein $P=2^N$ and wherein $N = 1, 2$ or 3 and wherein the selected pixels are different

from and contiguous to the particular pixel and to the additional particular pixel.

5. The method of claim 1 wherein $P=2^N$ and further comprising identifying each of the plurality of pixels other than the particular pixel as an additional particular pixel, and for each said additional particular pixel:

Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;

Determining an additional blurred value as a function of the values of the selected additional pixels; and

Replacing the value of the additional particular pixel with the additional blurred value.

6. The method of claim 5 wherein $P=2^N$ and wherein $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel and to the additional particular pixels.

7. The method of claim 1 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing comprises replacing the value of the particular pixel with the average.

8. The method of claim 7 wherein $N = 1$, wherein determining comprises masking the least significant bit of the value of each selected pixel, dividing the masked value of each selected pixel by 2 to get a divided value for each selected pixel, and summing the

divided values to get a total value, and wherein replacing comprising replacing the value of the particular pixel with the total value.

9. The method of claim 8 wherein dividing comprising right shifting by one bit the bits of the value of each selected pixel.
10. The method of claim 7 wherein $N = 2$, wherein determining comprises masking the least significant bit and masking the second least significant bit of the value of each selected pixel, dividing the masked value of each selected pixel by 4 to get a divided value for each selected pixel, and summing the divided values to get a total value, and wherein replacing comprising replacing the value of the particular pixel with the total value.
11. The method of claim 10 wherein dividing comprising right shifting by two bits the bits of the value of each selected pixel.
12. The method of claim 7 wherein $N = 3$, wherein determining comprises masking the least significant bit, masking the second least significant bit and masking the third least significant bit of the value of each selected pixel, dividing the masked value of each selected pixel by 8 to get a divided value for each selected pixel, and summing the divided values to get a total value, and wherein replacing comprising

replacing the value of the particular pixel with the total value.

13. The method of claim 12 wherein dividing comprising right shifting by three bits the bits of the value of each selected pixel.
14. The method of claim 1 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.
15. A system for blurring a digital video image having a plurality of pixels, each having a value specifying color data, said system comprising:
A memory storing the values of the pixels of the digital video image; and
A processor for:
Identifying a particular pixel of the plurality of pixels;
Selecting P pixels from the plurality of pixels;
Determining a blurred value as a function of the values of the selected pixels stored in the memory; and
Replacing the value of the particular pixel stored in memory with the blurred value;
A display for displaying the replaced values stored in memory and displaying the other values stored in memory which have not been replaced.

16. The system of claim 15 wherein $P=2^N$, $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel.
17. The system of claim 15 wherein $P=2^N$, said processor identifying another pixel of the plurality of pixels other than the particular pixel as an additional particular pixel, and for said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.
18. The system of claim 15 wherein $P=2^N$, said processor identifying each of the plurality of pixels other than the particular pixel as an additional particular pixel, and for each said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.
19. The system of claim 15 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing

comprises replacing the value of the particular pixel with the average.

20. The system of claim 15 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.
21. A computer readable medium having instructions for blurring a digital video image having a plurality of pixels, each having a value specifying color data, said instructions comprising:
 - Identifying a particular pixel of the plurality of pixels;
 - Selecting 2^N pixels from the plurality of pixels, where N is a positive integer;
 - Determining a blurred value as a function of the values of the selected pixels; and
 - Replacing the value of the particular pixel with the blurred value.
22. The medium of claim 21 wherein $P=2^N$, $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel.
23. The medium of claim 21 wherein $P=2^N$, said instructions further comprising identifying another pixel of the plurality of pixels other than the particular pixel as an additional particular pixel, and for said additional particular pixel:

Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.

24. The medium of claim 21 wherein $P=2^N$, said instructions further comprising identifying each of the plurality of pixels other than the particular pixel as an additional particular pixel, and for each said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.
25. The medium of claim 21 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing comprises replacing the value of the particular pixel with the average.
26. The medium of claim 21 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.

27. A method of modifying values from a plurality of values, said method comprising:
Identifying a particular value;
Selecting 2^N values from the plurality of values, where N is a positive integer;
Determining a modified value as a function of the selected values; and
Replacing the particular value with the modified value.
28. The method of claim 27 wherein $P=2^N$, $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel.
29. The method of claim 27 wherein $P=2^N$ and further comprising identifying another pixel of the plurality of pixels other than the particular pixel as an additional particular pixel, and for said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.
30. The method of claim 27 wherein $P=2^N$ and further comprising identifying each of the plurality of pixels other than the particular pixel as an additional particular pixel, and for each said additional particular pixel:

Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.

31. The method of claim 27 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing comprises replacing the value of the particular pixel with the average.

32. The method of claim 27 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.

33. A method of blurring a digital video image having a plurality of pixels, each having a value specifying color data, said method comprising:

Identifying a particular pixel of the plurality of pixels;

Selecting 2^N pixels from the plurality of pixels, where N is a positive integer;

masking the least significant N bits of the value of each selected pixel to get a modified value for each selected pixel

dividing the modified value of each selected pixel by 2^N to get a divided value for each selected pixel;

summing the divided values to get a total value;
and
replacing the value of the particular pixel with
the total value whereby the particular pixel has
a blurred value.

34. The method of claim 33 wherein $P=2^N$, $N = 1, 2$ or 3
and wherein the selected pixels are different from and
contiguous to the particular pixel.

35. The method of claim 33 wherein $P=2^N$ and further
comprising identifying another pixel of the plurality of
pixels other than the particular pixel as an additional
particular pixel, and for said additional particular pixel:
Selecting 2^M additional pixels from the plurality of
pixels, where M is a positive integer;
Determining an additional blurred value as a function
of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel
with the additional blurred value.

36. The method of claim 33 wherein $P=2^N$ and further
comprising identifying each of the plurality of pixels
other than the particular pixel as an additional particular
pixel, and for each said additional particular pixel:
Selecting 2^M additional pixels from the plurality of
pixels, where M is a positive integer;
Determining an additional blurred value as a function
of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel
with the additional blurred value.

37. The method of claim 33 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing comprises replacing the value of the particular pixel with the average.

38. The method of claim 33 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.

39. A method of blurring a digital video image having a plurality of pixels, each having a value specifying color data, said method comprising:

- Identifying a particular pixel of the plurality of pixels;
- Selecting 2^N pixels from the plurality of pixels, where N is a positive integer;
- right shifting by N bits the bits of the value of each selected pixel to get a modified value of each selected pixel;
- dividing the by 2^N to get a divided value for each selected pixel;
- summing the divided values to get a total value;
- and
- replacing the value of the particular pixel with the total value whereby the particular pixel has a blurred value.

40. The method of claim 39 wherein $P=2^N$, $N = 1, 2$ or 3 and wherein the selected pixels are different from and contiguous to the particular pixel.

41. The method of claim 39 wherein $P=2^N$ and further comprising identifying another pixel of the plurality of pixels other than the particular pixel as an additional particular pixel, and for said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.

42. The method of claim 39 wherein $P=2^N$ and further comprising identifying each of the plurality of pixels other than the particular pixel as an additional particular pixel, and for each said additional particular pixel:
Selecting 2^M additional pixels from the plurality of pixels, where M is a positive integer;
Determining an additional blurred value as a function of the values of the selected additional pixels; and
Replacing the value of the additional particular pixel with the additional blurred value.

43. The method of claim 39 wherein $P=2^N$ and wherein determining comprises calculating an average of the values of the selected pixels and wherein replacing comprises replacing the value of the particular pixel with the average.

44. The method of claim 39 wherein $P=2^N$ and wherein the determining and replacing is accomplished by processing all channels of each selected pixel in parallel.